39. A process for producing reinforced slabs of products made of stone material, having a reinforcement which includes a hardened resin combined with a rear face of the slab, comprising

providing a slab of stone material having a rear substantially smooth face free of grooves or recess;

providing non-twisted linear reinforcing elements;

coating the non-twisted linear reinforcing elements with a coating of a resin to form a reinforcement having a percentage ratio by weight of resin to the non-twisted linear reinforcing elements of at most 50:50;

inserting a reinforcing layer between the coated non-twisted linear reinforcing elements and the rear face of the slab of stone material; and

hardening of the resin.

40. The process according to claim 39, wherein said non-twisted linear elements consist of strands of glass.

41. The process according to claim 40, wherein said glass strands are in the form of a matting.

42. The process according to claim 41, wherein the percentage weight ratio of the resin to the glass-strand matting is 33:66.

43. The process according to claim 39, wherein said slabs of stone material have a thickness no greater than 10 mm.

44. The process according to claim 43, wherein said slabs of stone material have a thickness between 6 to 8 mm.

45. The process according to claim 39, wherein the linear reinforcing elements are made of metal, and the metal is steel.

46. The process according to claim 39, wherein grooves or recesses are formed on said rear face of the slab and said linear reinforcing elements are housed in the grooves or recesses.

47. The process according to claim 46, wherein said grooves or recesses form a grid.

48. The process according to claim 46 including inserting laid down glass fiber yarns between said reinforcement and the rear face of the slab linear reinforcing elements and sealing the laid down glass fiber yarns within the grooves or recesses.

49. The process according to claim 48, wherein said linear reinforcing elements include rods or bars of extruded fibers of glass and resin.

50. The process according to claim 49, wherein said linear rods or bars have a diameter of 2 to 2.5 mm.

51. The process according to claim 49, wherein said rods or bars comprise 68% glass and 32% resin, the percentages being expressed by weight.

52. The process according to claim 39, wherein the linear reinforcing elements include the glass strands and resin having a ratio of 55:45 of the glass strands to the resin.

53. The process according to claim 39, wherein said slabs of stone material have a thickness between 6 to 8 mm.

54. The process according to claim 53, wherein hardening of the resin is performed by the step selected from the group consisting of adding a catalyst to the resin, application of heat to the resin, or combination of the addition of a catalyst and heat.

55. The process according to claim 39, wherein the linear reinforcing members comprise four 4800 TEX (19.6 g/m) glass threads laid down within grooves formed in the slabs having a dimension of 3 to 4 mm in depth.

56. The process according to claim 55, wherein the glass threads are non-twisted and have a linear dilatation coefficient of 8 to 9 $\times 10^{-6}$.

57. The process according to claim 55, wherein the glass threads are cylindrical and have a circular cross-section with a diameter between 2 to 2.5 mm, a linear dilatation coefficient of 7.5×10^{-6} and a glass content of 68 percent and resin content of 32 percent by weight.

58. The process according to claim 39, including applying two mats of non-twisted glass strands impregnated with 33% by weight of an epoxy resin, to provide for a linear expansion coefficient of the mat and resin combination between 15 and 30×10^{-6} per °C.

59. The process according to claim 39, wherein:

said step of providing non-twisted linear reinforcing elements includes providing a first mat of non-twisted glass strands; and

said step of inserting a reinforcing layer includes providing a second mat of non-twisted glass strands between the first mat of non-twisted glass strands and the rear face of the slab of stone material.

60. The process according to claim 59, wherein the second mat of glass strands is coated with a resin.

61. A process for producing a reinforced slab of stone material, comprising the steps of:

a. providing a slab of stone material having a rear face substantially free of grooves or recesses;

b. providing a first layer of non-twisted linear reinforcing elements coated with a resin, the percentage of resin to non-twisted linear reinforcing elements in the first layer being at most 50:50 by weight;

c. providing a second layer of non-twisted linear reinforcing elements coated with a resin, the percentage of resin to non-twisted linear reinforcing elements in the second layer being at most 50:50 by weight;

d. applying the first and second layers of non-twisted linear reinforcing elements to the rear face of the slab such that the second layer is between the first layer and the rear face of the slab; and

e. hardening the resin.

62. The process of claim 61, wherein the non-twisted linear reinforcing elements comprise non-twisted glass strands.

63. The process of claim 61, wherein the non-twisted linear reinforcing elements comprise non-twisted carbon fibers.

64. The process of claim 61, wherein the resin is epoxy resin.

65. A process for producing a reinforced slab of stone material, comprising the steps of:

a. providing a slab of stone material having a rear face substantially free of grooves or recesses;

b. forming grooves or recesses on the rear face of the slab;

c. providing a first reinforcing layer of non-twisted linear reinforcing elements coated with a resin, the percentage of resin to non-twisted linear reinforcing elements in the first layer being at most 50:50 by weight;

d. providing a second reinforcing layer of linear reinforcing elements;

e. applying the first and second reinforcing layers to the rear face of the slab such that the second layer is between the first layer and the rear face of the slab and the reinforcing elements of the first reinforcing layer are disposed in the grooves or recesses; and

f. hardening the resin.

REMARKS

The Rejections

In the Office Action of April 17, 2002, the Examiner rejected all of the prior-pending claims (claims 1-6, 14-27, and 29-38) under 35 U.S.C. § 251 as being an improper recapture of broadened subject matter surrendered during prosecution of the original patent upon which this reissue application is based. He also

(a) rejected claims 1, 2, 5, 6, and 14-16 as being anticipated by or obvious in view of Japanese Patent Publication No. 6-64076 ("Japan '076");